



# Reusing a tea towel or cloth for multiple purposes

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# Introduction

Kitchen Life 2 (KL2) is a study that used motion-sensitive cameras in household and business kitchens to observe real-life behaviour (preparing food, cooking, and cleaning). This observational data was supplemented with data from surveys, interviews, and food diaries. The COM-B behavioural framework was used to understand the influences on behaviour. The resulting analysis provides fresh insight for risk assessment, policy development, and behavioural intervention design in relation to food safety and food waste behaviours in household and business settings.

KL2, which was commissioned by the FSA in February 2021 and completed in June 2023, was delivered by Basis Social, with support from Leeds University Business School. This unique and innovative research project won the Analysis in Government 'Innovative Methods' award in 2022.

## Aims and Objectives

The aims of the study were to identify:

- the key behaviours relating to food safety that occur in household and business kitchens
- where, when, how often, and with whom food safety behaviours occur, and the key factors that influence these behaviours

KL2 had two main objectives:

- to provide highly detailed, real-life data for risk assessment at the FSA
- to inform future behavioural interventions research

## Method

Overall, 101 kitchens participated in KL2, with 70 households and 31 food business operators (FBOs) taking part across England, Wales, and Northern Ireland.

After a literature review and a pilot, the main fieldwork design involved installing motion sensitive cameras to film participants in their kitchen over 5-7 days, with 3 days of footage analysed from this period.

The footage was coded, with labels applied to describe the behaviour (e.g., washing hands with soap), person (e.g., chef), and context (e.g., sink, utensils). In addition, fridge and freezer thermometers were used to monitor the temperature of the

appliances during the fieldwork period. Photographs were also taken of the interior of a fridge and, for households only, a food diary and shopping receipts were kept, to verify ingredients cooked.

After the filming period, survey, interviews, and observational methods were used to understand influences on food safety behaviours. The fieldwork took place over 5 waves between June 2021 and October 2022.

Behaviours were analysed using the COM-B behavioural model. The model enabled the research team to systematically explore the barriers and enablers of various food safety behaviours in relation to capability, opportunity, and motivation.

Experts in food safety policy, behavioural sciences, and communications were then involved in a workshop to discuss findings and consider behaviours to target for future interventions.

Further methodological details about this study are available in the [Technical Report](#), and a raw dataset can be downloaded via the [FSA's Data Catalogue](#).

## Research Reports

This is one of 7 chapters detailing the findings from this study. Each report focuses on a behaviour of interest to the FSA, exploring the behaviour in detail, using COM-B analysis to identify the factors influencing the behaviour, and discussing the behaviours that would need to change to achieve the desired practice. Each report also contains a case study, which explores a real scenario captured during the KL2 study, to illustrate the behaviour.

The other 6 chapters can be found here:

- [Not washing hands with soap after touching meat, fish and poultry](#)
- [Reusing a chopping board after preparing meat, fish and poultry](#)
- [Storing chilled foods at incorrect temperatures](#)
- [Not reheating leftovers until steaming hot throughout](#)
- [Not checking use-by dates and consuming foods past use-by dates](#)
- [The creation of food waste](#)

Key insights across all 7 reports are available via the main [Kitchen Life 2 webpage](#).

Further details about why these behaviours were selected as the focus for KL2 reports is provided in the [Technical Report](#).

## Summary

Tea towels and cloths can be one of the top causes of cross-contamination in the kitchen, as bacteria persist on them<sup>1</sup>. In the Kitchen Life 2 (KL2) study, these items were used for a wide variety of purposes in households and by food business operators (FBOs) – including mopping up spills, wiping surfaces, drying plates, wiping chopping boards, as well as wiping hands and faces.

The reuse of tea towels and cloths for multiple purposes was observed on a fifth (210) of all meal occasions in households, and just under a third (87) of all meal occasions in FBOs.

Overall, the influences on reusing a tea towel or cloth were very similar across households and FBOs. They were:

- the **convenience and availability** of tea towels and cloths, which were routinely carried or left around the kitchen for use when needed (physical opportunity).
- the **habitual and unconscious** nature of the behaviour (automatic motivation).

These were reinforced by the following contextual factors <sup>2</sup>:

- **beliefs about the consequences** of foodborne illness from reusing tea towels or cloth, which were seen as minimal. In addition, in FBOs, carrying a tea towel over the shoulder was seen as a key part of a chef's **identity** (reflective motivation).
- the **permissive social norms** around reusing tea towels and cloths, which had greater influence in FBOs than in households (social opportunity).

## Behaviours to target for potential interventions

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<sup>1</sup> Mattick K. 'The survival of foodborne pathogens during domestic washing-up and subsequent transfer onto washing-up sponges, kitchen surfaces and food' International Journal of Food Microbiology 2003: volume 85(3), pages 213–226, cited in [Kitchen Life 2 literature review](#)

<sup>2</sup> These factors are not in a hierarchy of importance

In households, the desired practice (that is, the behaviour that households should do to improve food safety) is **to wash or replace a tea towel or cloth regularly.**

Focussing on the different cues that result in the desired practice, particularly sensorial cues of replacing the tea towel when it's damp or when it smells should be a key focus for behavioural intervention design.

The other specific behaviour in households that could be the focus for behavioural interventions research was **using different cloths for specific tasks**, as observations showed that most households had a variety of tea towels and cloths in the kitchen. When considering interventions, it may be helpful to narrow this behaviour even further for example the types of cloth being used, and the tasks that cloths are used for (e.g., using a separate cloth for surfaces and washing up).

In FBOs, the desired practice is **to use disposable cloths wherever possible and always use a new or freshly cleaned and disinfected cloth to wipe work surfaces, equipment or utensils.**

In FBOs, associating the use of disposable cloths with a specific task, such as wiping down surfaces after preparing raw meat, fish, poultry (MFP), is a priority behaviour to target for interventions. Where disposable cloths are not available, encouraging staff to change tea towels or cloths at specific trigger points during the food preparation process (such as after preparing raw meat), or using different cloths for specific tasks is also a focus area for future interventions research. Additionally, chefs carrying tea towels was an extremely common behaviour. Motivating chefs to change their 'personal' tea towel frequently, is an additional behaviour to target.

#### **Further recommendation: improving FSA guidance**

Finally, FSA guidance for consumers on reusing cloths and tea towels is limited (recommending that cloths are washed 'regularly'). There may be room to improve FSA guidance in this area, for example being more specific about the frequency for washing tea towels and cloths.

# Background

Cloths and tea towels can be of the top causes of cross-contamination in the kitchen, as bacteria persist on them<sup>3</sup>. A study found sponges and tea towels to contain the most coliform bacteria in household kitchens<sup>4</sup>, and research among older adult consumers found cloths or sponges to be contaminated with microorganisms in 93% of the kitchens<sup>5</sup>.

The [literature review](#) conducted as part of KL2 identified that the level of microbial contamination on hand towels varies by household and is greater in single occupancy than multi-occupancy households<sup>6</sup>. The literature review also highlights that only 50% of households report changing their hand towels in line with the recommended guidance of weekly or sooner<sup>7</sup>.

The potential cross-contamination risks associated with the multiple uses of tea towels and cloths made it a topic of interest for KL2. Additionally, KL2 could help to provide evidence on how tea towels and cloths are used in FBOs, given a lack of published literature in this area.

This chapter uses the KL2 data to understand practices around the reuse of tea towels and cloths, the factors affecting this, and identifies behaviours that could be the focus of future interventions research.

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<sup>3</sup> Mattick K. 'The survival of foodborne pathogens during domestic washing-up and subsequent transfer onto washing-up sponges, kitchen surfaces and food' International Journal of Food Microbiology 2003: volume 85(3), pages 213–226, cited in [Kitchen Life 2 literature review](#)

<sup>4</sup> Borrusso PA and Quinlan JJ. 'Prevalence of pathogens and indicator organisms in home kitchens and correlation with unsafe food handling practices and conditions' Journal of Food Protection 2017: volume 80(4), pages 590–597.

<sup>5</sup> Evans EW and Redmond EC. 'Behavioural observation and microbiological analysis of older adult consumers' cross-contamination practices in a model domestic kitchen' Journal of Food Protection 2018: volume 81(4), pages 569–581

<sup>6</sup> Evans, E. W., & Redmond, E. C. Domestic kitchen microbiological contamination and self-reported food hygiene practices of older adult consumers. Journal of Food Protection, 2019: 82(8), 1326-1335.

<sup>7</sup> Ammann, J., Siegrist, M., & Hartmann, C. The influence of disgust sensitivity on self-reported food hygiene behaviour. Food Control 2019: 102, 131-138.

# FSA guidance on the use of tea towels and cloths

For households, the FSA's ['Kitchen Check' guidance](#) recommends changing or washing tea towels, sponges, aprons and cloths at least once a week. In the FSA [guidance on cleaning](#), the recommendation is to wash or change dishcloths, tea towels, sponges and oven gloves 'regularly'. The guidance also notes the importance of letting the item dry before it is used again, this is because dirty, damp cloths allow bacteria to breed.

For FBOs, the FSA's [Safer Food, Better Business guidance on cloths](#)<sup>8</sup> highlights the importance of the following to prevent bacteria and allergens from spreading:

- using disposable cloths wherever possible and disposing of them after each task
- always using a new or freshly cleaned and disinfected cloth to wipe work surfaces, equipment or utensils that will be used with ready-to-eat food
- taking away reusable cloths for thorough washing and disinfection after using them with MFP (raw or cooked), eggs or raw vegetables, not just changing the cloths when they look dirty
- washing and disinfecting surfaces that these foods have touched

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<sup>8</sup> Separate guidance is available to [FBOs in Northern Ireland](#)

# Kitchen Life 2: Findings for households

This section of the report presents quantitative and qualitative findings from households during the KL2 study.

In some sections, the findings reference the handling of meat, fish and poultry (MFP). Where “MFP” is referred to in quantitative findings from filming (where behaviours have been coded and counted, based on video footage) this includes both raw and cooked MFP, and this is stated clearly. Qualitative findings, based on reviewing individual sections of footage for behavioural analysis (such as case studies) and interviews are specific to raw MFP only, and “raw” is clearly stated. Findings from a survey conducted with households are also included.

Further information about the coding of raw and cooked MFP is available in [the KL2 technical report](#).

## Quantitative observations from filming

In the sample of 70 households, 69 households were observed to use a cloth or tea towel. In the survey, 68 households claimed to use tea towels and 57 claimed to use cloths (with one household using neither item). Where cloths and tea towels were present during the observed footage, all households used them for a variety of purposes. Tea towels and cloths were typically not observed to be washed after such uses, or in between uses.

Frequently observed uses included:

- wiping or drying kitchen items or surfaces
- wiping hands while cooking (while less frequent, this also included when raw MFP was prepared)
- drying hands
- mopping up spilt foods or liquids

Occasionally observed uses:

- wiping faces (both adults and children)
- wiping the floor



Rarely observed uses:

- wiping raw MFP
- wiping shoes
- wiping body parts, other than the face or hands (such as arms and armpits)

While microbiological tests were not conducted as part of KL2, based on levels of microbial contamination of cloths identified from previous research<sup>9</sup>, and observations of cloth or tea towel reuse in this study, it is likely these behaviours present a significant cross-contamination risk.

Specifically, in households, the reuse of a cloth or tea towel was observed on 210 meal occasions (around 1 in 5 of all meals). Of these 210 meal occasions, 89 meals also involved the preparation of MFP (raw/cooked). While households rarely wiped raw/cooked MFP directly<sup>10</sup>, 40% of all raw/cooked MFP food preparation occasions also involved participants wiping their hands on a tea towel, cloth or their clothing.

In terms of cross-contamination, the top 5 most common surfaces touched when reusing a tea towel or cloth were (based on order of frequency):

- kitchen countertops
- dishes
- cupboards
- sinks
- pots and pans

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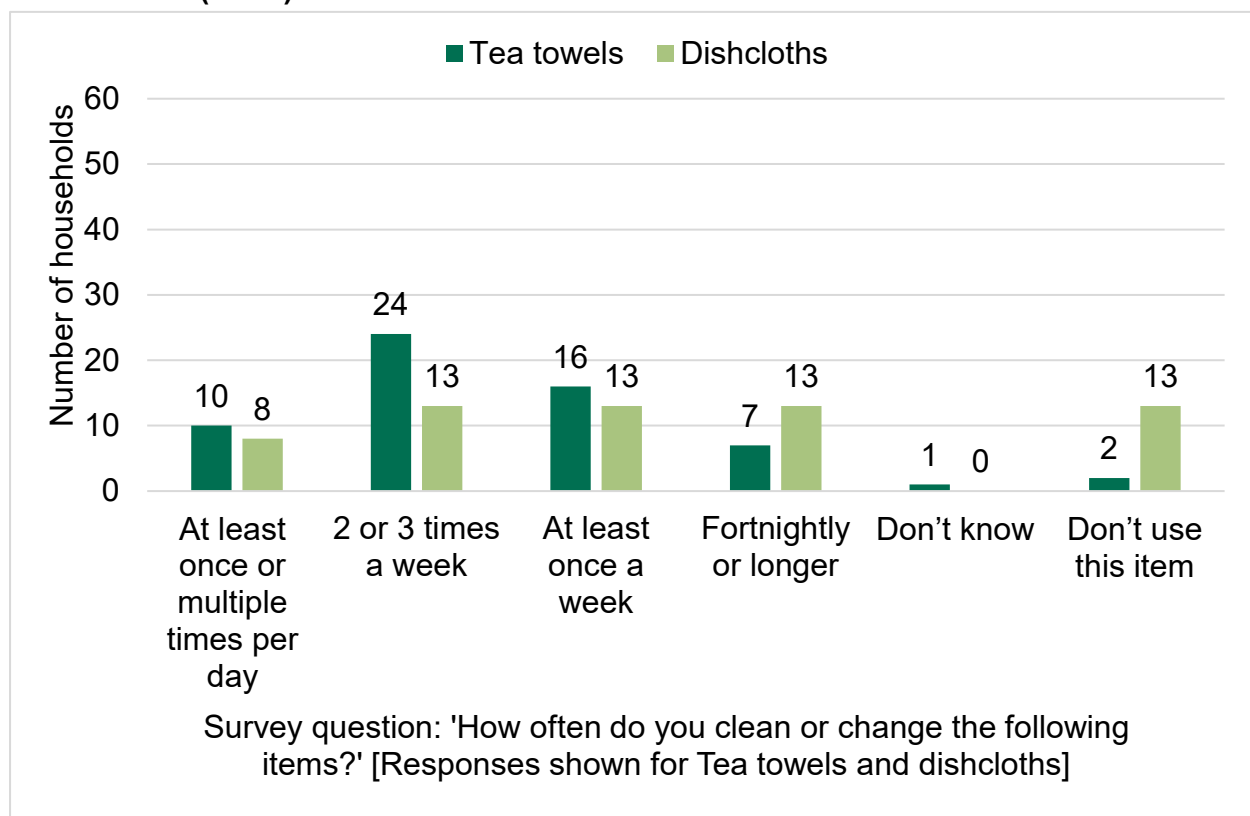
<sup>9</sup> Borrusso PA and Quinlan JJ. 'Prevalence of pathogens and indicator organisms in home kitchens and correlation with unsafe food handling practices and conditions' *Journal of Food Protection* 2017: volume 80(4), pages 590–597

<sup>10</sup> There were minor instances of participants using a tea towel to wipe and remove the juices from raw chicken or using a tea towel handle raw fish, to avoid touching the food.

Within the household sample, the reuse of cloths and/or tea towels was statistically most likely to occur on a Sunday. Greater time was spent cooking meals on a Sunday than on other days, increasing the opportunity to reuse the items.

The frequency of cleaning or changing the item also has the potential to influence the cross-contamination risks from the reuse of tea towels or cloths. In the survey, most households claimed to clean or change tea towels (50 out of 68 who use the item) or cloths (34 out of 57 who use the item) in line with the recommended FSA guidance of at least once a week. This implies that cleaning or replacing behaviours were not a notable source of risk (see figure 1). However, it is possible that cleaning or replacing behaviours may be overclaimed in the survey. In observations, it was common for a single cloth or tea towel to be used for multiple purposes and over several days, and there did not appear to be set routines or practices around washing. It was not possible to verify the cleaning frequency of cloths or tea towels through observation, as washing took place out of view of the camera.

**Figure 1. Claimed frequency of cleaning or changing tea towels or cloths in households (n=60)<sup>11</sup>**



<sup>11</sup> 10 households failed to answer this question in the survey.

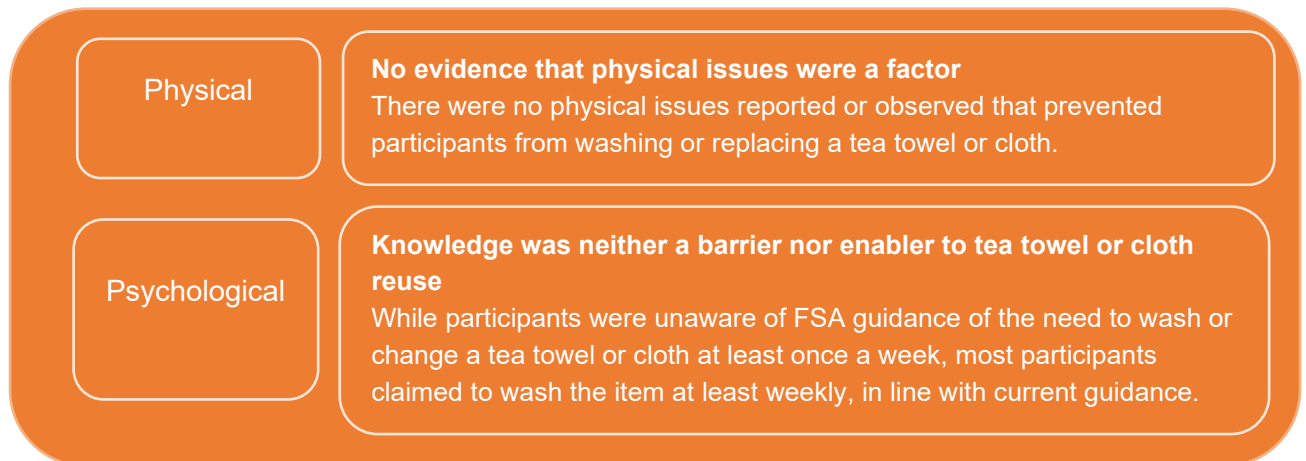
# Factors influencing the multiple use of tea towels and cloths in households

## Summary

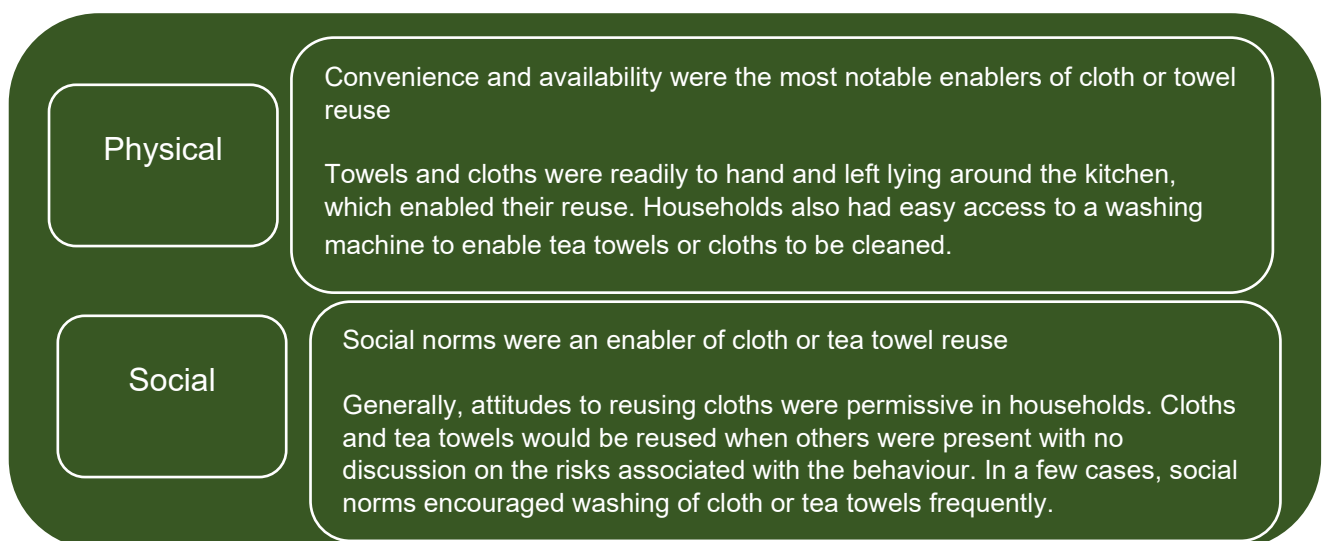
In households, the reuse of tea towels and cloths for multiple purposes was opportunistic and habitual. The behaviour was reinforced by beliefs about the low likelihood of foodborne illness arising from the multiple use of tea towels or cloths, together with permissive social norms around their reuse. A summary of COM-B factors is given in figure 2.

**Figure 2. Summary of COM-B factors influencing the multiple use of tea towels and cloths in households**

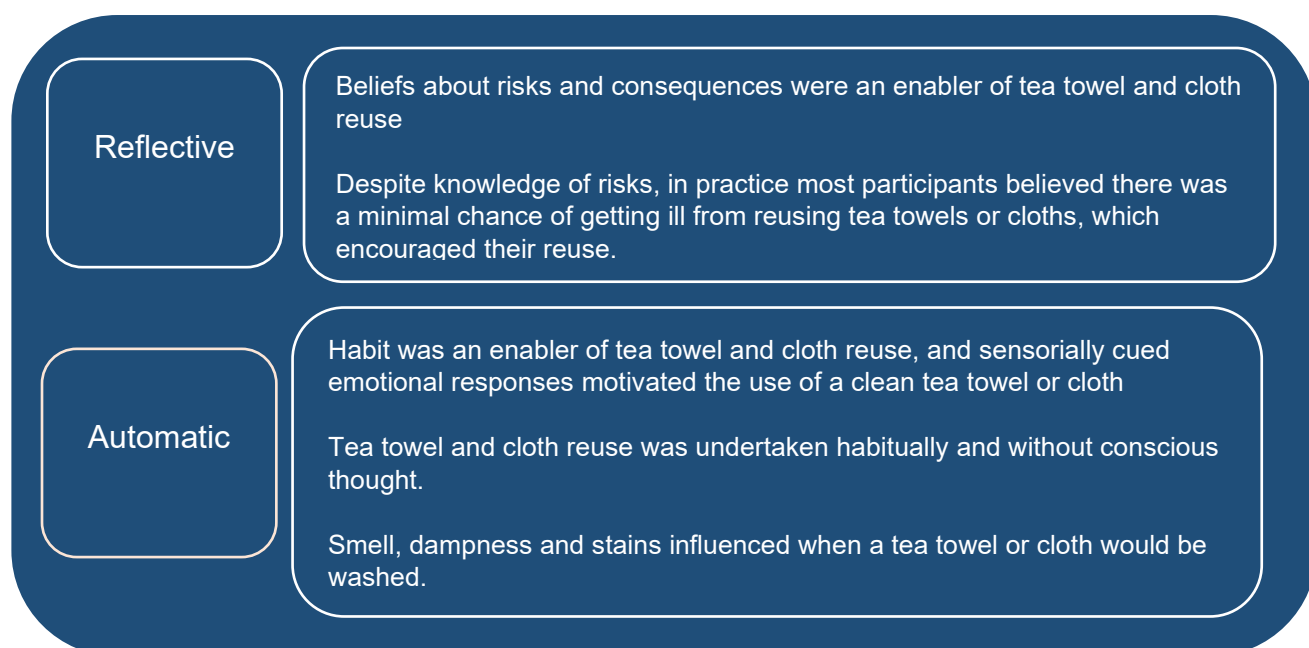
### Capability



### Opportunity



## Motivation



## Detailed findings

### Physical capability

There were no instances of participants saying that either they or members of their household were physically incapable of replacing or cleaning tea towels or cloths. The cleaning of tea towels and cloths was reported in interviews to be done in a washing machine rather than by hand although this could not be verified in the observations<sup>12</sup>.

### Psychological capability

Participants were unaware that the current advice from the FSA for households was to change or wash tea towels, sponges, and dishcloths at least once a week.

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<sup>12</sup> In some kitchens the washing machine was not in view of the camera. Analysis of observed footage was only across 3 days of filming, which may not capture regular washing practices.

Nonetheless, most participants claimed to adopt this behaviour, though this was predominately driven by sensorial cues (see [automatic motivation](#)).

Participants understanding of, and beliefs around the risks associated with unclean tea towels and cloths is explored in the [reflective motivation](#) section.

### **Physical opportunity**

The accessibility of tea towels and cloths, in terms of them being close to hand, was one of the key factors influencing how they were used. It was very common for tea towels to be left hanging in the kitchen or on a countertop to be reused. Tea towels would also be carried around the kitchen by participants to wipe a surface, take a meal out of the oven or dry an item.

In a few households, tea towels were placed in specific areas of the kitchen, and participants claimed that this influenced how the towels were used.

“Yeah, on the wall. There’s one that’s closest to the kettle. So those ones are ones that you dry your hands on and the ones that are on the oven I use to get the food out.”

Female, 26–40, Black, socio-economic group ABC1, lives with family

However, observations showed that, despite such practices, the use of the same tea towel for only one purpose was very uncommon. Instead, participants used the same tea towel for a variety of purposes. Cloths generally had fewer uses than tea towels, and were mainly used for mopping up spills, wiping surfaces and washing items in the sink. Cloths were less likely to be carried around the kitchen than tea towels and were generally kept near the sink.

In terms of cleaning or replacing tea towels and cloths, the availability of fresh items was not cited as a limiting factor. For example, it was common for participants to say they had a ‘drawer full of tea towels’ and participants would wash them in the laundry as part of their clothes-washing routine.

“We’ve got like a stack of 10 or 20 tea towels. So every time we do laundry, which is practically every day, we’ll just swap them and wash the tea towels.”

Male, 26–40, White, socio-economic group ABC1, lives with family

Having multiple cloths was less common, though a lack of availability of fresh cloths was not cited as a barrier to changing them. Only one participant mentioned difficulties with drying cloths as a barrier to changing the item. Specifically, their dryer had broken resulting in a 'conscious effort to try and get them washed and hung out there ready to go'.

Disposable kitchen towel (or kitchen roll) was used as a substitute for cloths or tea towels in several kitchens – generally to clean spills or dry hands. There were minor associations of disposable kitchen towels being more hygienic to use than tea towels or cloths, especially for higher-risk foods such as when prepping raw MFP. However, in interviews most participants said they were not conscious of using disposable kitchen towels for specific purposes and it was likely used out of habit. There was also concern expressed by several participants about the environmental and cost impact of using disposable towels and roll.

### **Social opportunity**

Overall, social norms were permissive around tea towel and cloth reuse. There were many instances of others being present in the kitchen when the reuse of cloths or tea towels occurred, including when wiping hands on tea towels when preparing raw foods. No discussion of the risks associated with the behaviour were observed in these instances.

Additionally, concern about whether others in the household may reuse a dirty tea towel or cloth did not appear to shape behaviours. Observations showed that members of households would use a tea towel or cloth to clean various items – from spillages on countertops to wiping dirty shoes – only to place the cloth back on the kitchen counter. Other members of the household would then reuse the cloth unaware of this behaviour.

In a few households, social norms did have a modest influence on washing or replacement behaviours. For example, for households claiming to wash tea towels and/or cloths at least once a day, it was mentioned that this was typically driven by one household member who 'had a thing about germs'. However, in interviews, such washing routines were cited as not being adopted by others in the household.

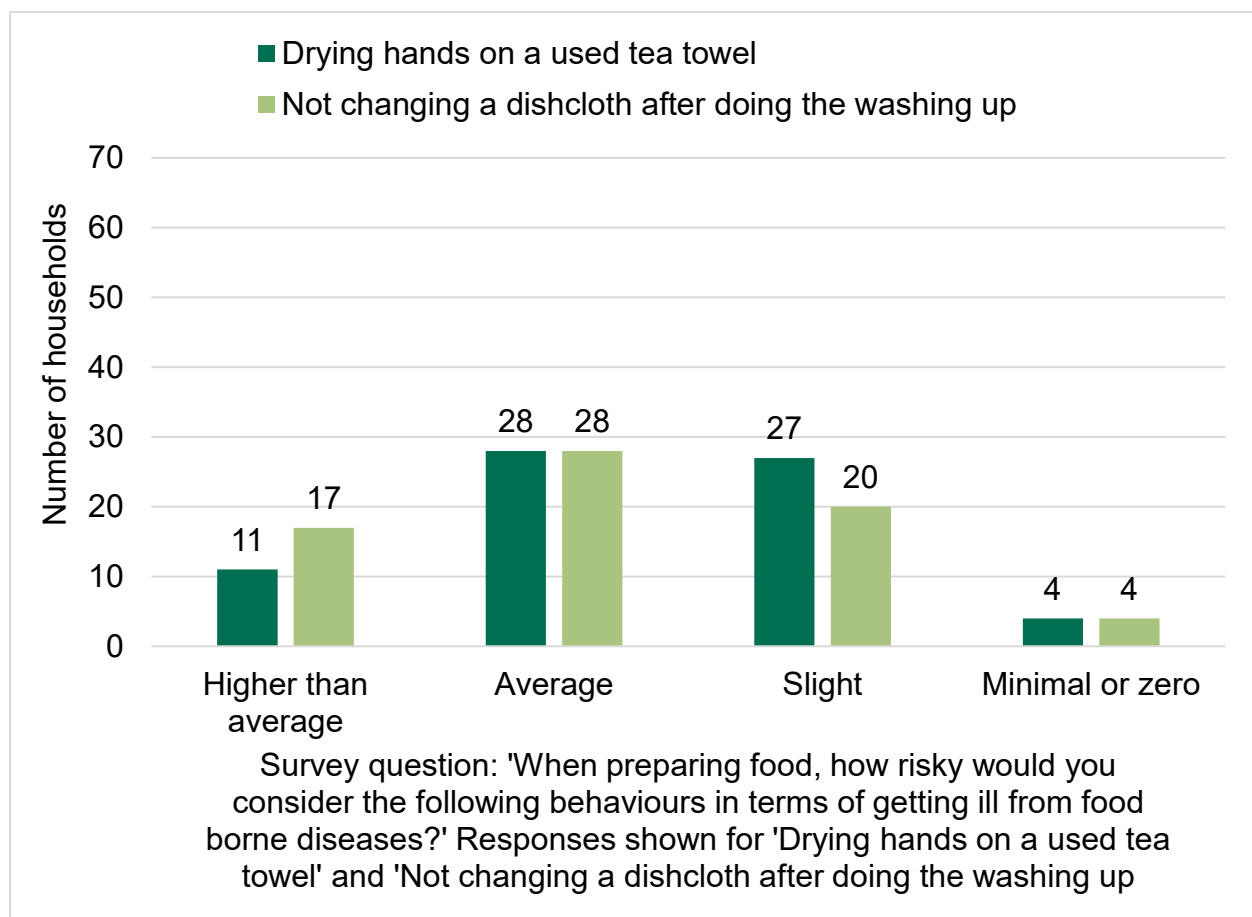
“Gosh, we use multiple cloths each day. My partner is really funny about it. He’s very much like, once you’ve done with that, that goes in the wash. Whereas I would probably reuse it and let it dry.”

Female, 26–40, White, socio-economic group ABC1, lives with family

### Reflective motivation

Participants had range of beliefs about the consequences of foodborne illness resulting from reusing tea towels or cloths, identified from the survey. Participants were broadly split between those who associated a 'higher-than-average risk' or 'average risk', versus those associating a 'slight risk' or 'minimal risk' (see figure 3).

**Figure 3: Relative risk associated with getting ill from a foodborne disease from reusing a tea towel or dishcloth in households (n=70)**



In interviews, beliefs about potential risks from tea towels and cloths were claimed to influence the behaviour of participants. For example, participants who associated a 'higher-than-average risk' in the survey claimed they only used tea towels and cloths for specific purposes, as they were likely to 'spread germs around' to other items in the kitchen or to their hands.

“I wash my hands after everything I touch, and dry them with a paper towel, never with the tea towel... if you’ve got germs on a tea towel, and you’re using it to clean cups and whatever, you’re just spreading it around.”

Male, 60+, White, socio-economic group ABC1, lives alone

Activities associated with higher risks, such as wiping down a countertop after raw MFP preparation, also influenced whether a tea towel or cloth would be used at all. For example, one participant said that they would not wipe their hands on a tea towel when preparing raw MFP, preferring to wash their hands due to the risk of getting ill.

“I wouldn’t wipe hands after touching meat. But if I was sort of like, cutting up, I don’t know, a cucumber or something, or I didn’t really need to wash it, I’ll just use the towel and wipe them that way.”

Male, 40–60 years, White, socio-economic group ABC1, lives with family

However, such claimed behaviours were not commonly observed in filming. For example, over 40% of all MFP preparation occasions in households (including raw and cooked MFP) also involved someone wiping their hands on a cloth (or their clothing).

In interviews, on balance, participants believed there were limited consequences of reusing tea towels and cloths in terms of a risk of foodborne illness, which enabled the behaviour. A few participants believed that as tea towels (in particular) were used on clean items – such as recently washed dishes or hands – they were unlikely to present a risk.

“Nah, there’s not much risk, I suppose. You just washed your hands, they’re already clean, right? That’s the way in which I see it.”

Female, 26–40 years, Black, socio-economic group ABC1, lives with family

Several participants mentioned they believed there was a greater risk from wet rather than dry tea towels or cloths, which were associated with ‘breeding grounds for bacteria’. This belief, in tandem with sensorial cues (discussed below in



automatic motivation), was claimed to influence a participant's motivation to change rather than reuse a tea towel or cloth.

### **Automatic motivation**

Observations indicate that participants used tea towels and cloths in habitual, unconscious ways in the kitchen. For example, it was common that a cloth or tea towel would be used to absentmindedly wipe surfaces down while waiting for something to cook or be instinctively grabbed when dealing with spillages. In interviews, tea towels were stated as being used 'without really thinking about it' to dry hands or crockery. Other participants also stated in interviews that they did not use tea towels for wiping surfaces, whereas such use was observed.

In terms of cleaning or replacing cloths and tea towels, in the interviews it was common for participants to say that sensorial cues shaped these behaviours. For example, visual cues (notably staining), hand feel (especially tea towels feeling cold and damp) and the smell of the towel or cloth were all stated as important triggers.

"You can smell when the tea towel needs changing. If it is really damp, we will get a fresh one."

Female, 26–40, White, socio-economic group ABC1, lives with partner

Very few participants relied on remembering the last time an item was cleaned to think about the need to change the item.

## **Case study**

### **Reusing a tea towel or cloth in households**

**Name:** Justin

**Age group:** 41–60 years

**Household composition:** Lives with family, including children

**Age of children:** 2 children, both under 5 years old

Justin works in finance, is in his 40s and lives with his wife, Mel, and 2 young children. Justin and Mel's lives are busy, and while they 'love cooking' they struggle to find time to plan meals properly. Justin describes Mel as a 'minimalist' and he and the children 'try hard to keep things clean and tidy'. Justin and Mel's

kitchen is relatively large and modern, with a central island where the family will sit and chat. The kitchen is generally uncluttered and looks clean. Justin has mixed attitudes to food hygiene. He believes 'a bit of dirt won't hurt you' and is 'good for the immune system'. But he is very concerned about preparing raw MFP, due to the potential food poisoning risk for the children.

They have several cloths in the kitchen, including a J-cloth, which is often left on top of the sink taps, and a cloth that is used for wiping surfaces and washing plates. They also have several tea towels that are used for a variety of purposes, including holding hot handles while cooking, wiping surfaces, wiping children's faces and drying crockery. Justin says that reusing tea towels for multiple purposes is 'not hygienic', though he also admits to not being conscious of how he uses tea towels when cooking. Overall, Justin believes any risk is managed as tea towels 'are washed frequently'. Justin and Mel don't wish to use disposable kitchen towel as it is seen as bad for the environment and 'a waste of money'.

During one observation, Justin is busy preparing dinner for the children. He has a dark-coloured tea towel in his hand that he uses to wipe down dishes and surfaces as he cooks. In addition to wiping surfaces, at one point he also uses the tea towel to handle raw fish, by picking it out of a packet. In the interview, Justin was unaware of doing this.

When Justin is serving dinner, he drops some food on the floor and then uses a J-cloth to wipe the floor before returning the J-cloth to the sink. The J-cloth is not washed and later is used to wipe down a surface.

When Mel comes in later to help clean up, she uses the tea towel that was previously used by Justin to handle raw fish to wipe down the kitchen surfaces and a recipe card. On other meal occasions, Mel is also observed to use tea towels and cloths for many purposes – though not as frequently as Justin.

### **Analysis of Justin's behaviour**

The influences on Justin's behaviour primarily concern physical opportunity and automatic motivation, with both factors enabling the reuse of tea towels and cloths. Tea towels and cloths are convenient and available for reuse, being left out on kitchen surfaces and close to hand (physical opportunity). Justin is unaware of how he uses tea towels and cloths in the kitchen and is often distracted when using the item (automatic motivation). Despite knowledge of risks of cross contamination (psychological capability), and multiple fresh tea towels being available (physical opportunity), Justin is not motivated to wash the towel. Social norms may also influence Justin's behaviours, as Mel is also observed to reuse tea towels and cloths

on other meal occasions, and risks around the items reuse are not observed to be discussed (social opportunity).

## Identifying behaviours for interventions (households)

In reviewing the KL2 findings, the reuse of tea towels and cloths in households was predominately driven by convenience and availability, as the items were left around the kitchen and readily to hand. The habitual and unconscious nature of reuse tea towels and cloths potentially make it a challenging behaviour to address.

Additionally, the washing and changing of tea towels and cloths was triggered by sensorial cues, such as dampness, smell and whether the item looked dirty, rather than deliberate action to change the items every few days.

After KL2 fieldwork was completed, a workshop was held with experts in food safety and the behavioural sciences to discuss the COM-B influences on each of the KL2 priority behaviours, including reusing a tea towel or cloth for multiple purposes. In the workshop, experts discussed the findings from KL2 to explore the 'problem behaviours' that occurred in kitchens and then considered the 'desired practice'; that is, the behaviour that households should do to improve food safety. In this case, the desired practice is **to wash or replace a tea towel or cloth regularly**. In the workshop it was noted that the desired behaviour is associated with different cues; primarily sensorial cues (whether the tea towel was damp or smelt). In some cases, participants mentioned routines related to washing tea towels (e.g., washing cloths and tea towels with other laundry), although these were not always set routines. Therefore, the cues for washing and replacing tea towels and cloths should be a key focus of behavioural intervention design.

Once the 'desired practice' was established, the workshop then explored other specific behaviours to target. It should be noted that the workshop was not designed to explore behavioural interventions, as this was outside of the scope of KL2. These specific target behaviours could be used in future research, for the development of behavioural interventions.

The other specific behaviour identified was **using different cloths for specific tasks**. KL2 observations show that most households had a variety of tea towels and cloths present in the kitchen, and enabling the use of different cloths for different tasks was explored as a potential behaviour for interventions. When considering interventions, it may be helpful to narrow this behaviour even further for example the types of cloth being used, and the tasks that cloths are used for (e.g., using a separate cloth for surfaces and washing up).

## **Further recommendation: improving FSA guidance**

FSA guidance on reusing cloths and tea towels is limited (recommending that cloths are washed 'regularly'). The findings from this research indicate that there may be room to improve FSA guidance in this area, for example being more specific about the frequency for washing tea towels and cloths.

# Kitchen Life 2: Findings for food business operators

This section of the report presents quantitative and qualitative findings from filming in FBOs during the KL2 study.

In some sections, the findings reference the handling of meat, fish and poultry (MFP). Where “MFP” is referred to in quantitative findings from filming (where behaviours have been coded and counted, based on video footage) this includes both raw and cooked MFP, and this is stated clearly. Qualitative findings, based on reviewing individual sections of footage for behavioural analysis (such as case studies) and interviews are specific to raw MFP only, and “raw” is clearly stated. Findings from a survey conducted with FBOs are also included.

Further information about the coding of raw and cooked MFP is available in [the KL2 technical report](#).

## Quantitative observations from filming

In the sample of 31 FBOs, all were observed to use either tea towels or cloths. In the survey, 28 stated they used tea towels and 30 stated they used cloths. Where these items were present, all FBOs used them for a variety of purposes. Tea towels and cloths were typically not washed after such uses, or in between uses.

Frequently observed uses included:

- wiping hands while cooking
- wiping or drying kitchen items or surfaces
- drying hands
- mopping up spilt foods or liquids

Occasionally observed uses:

- wiping faces
- wiping plates used for service

Rarely observed uses:

- wiping the floor (additionally, tea towels and cloths dropped on the floor in FBOs were generally reused)
- blowing nose or wiping other body parts, such as arms and armpits

While microbiological tests were not conducted as part of KL2, based on levels of microbial contamination of cloths identified from previous research<sup>13</sup>, and observations of tea towel or cloth reuse in this study, it is likely these behaviours present a significant cross-contamination risk.

The reuse of a tea towel or cloth was observed on 87 meal occasions (just under 1 in 3 of all meal occasions). Of these 87 meal occasions, 71 involved the preparation of MFP (raw/cooked) with the reuse of a tea towel or cloth observed 184 times on these 71 occasions.

In terms of where cross-contamination may occur, the top 5 most common surfaces touched when reusing a tea towel or cloth in FBOs were, in order of frequency:

- countertops
- pots and pans
- cupboards or storage areas
- kitchen utensils
- dishes

Within our FBO sample, the multiple reuse of cloths and/or tea towels were statistically most likely to occur on a Friday or Saturday from 6–8pm when FBOs were especially busy with weekend orders.

Cross-contamination risks from the reuse of tea towels or cloths may also be influenced by the frequency of changing or washing the item<sup>14</sup>. Almost all FBOs

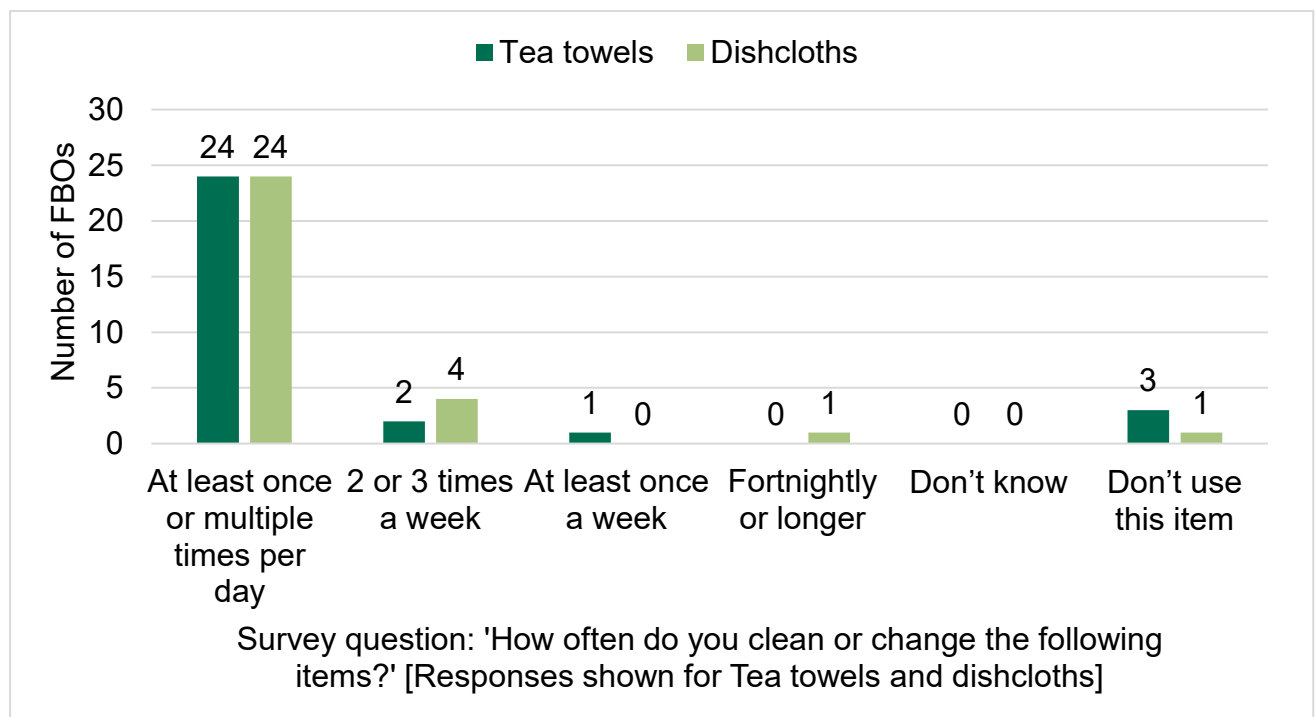
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<sup>13</sup> Borrusso PA and Quinlan JJ. 'Prevalence of pathogens and indicator organisms in home kitchens and correlation with unsafe food handling practices and conditions' *Journal of Food Protection* 2017: volume 80(4), pages 590–597

<sup>14</sup> Borrusso PA and Quinlan JJ. 'Prevalence of pathogens and indicator organisms in home kitchens and correlation with unsafe food handling practices and conditions' *Journal of Food Protection* 2017: volume 80(4), pages 590–597

claimed to wash or replace tea towels or cloths at least once a day, suggesting cleaning or replacing behaviours were not a significant source of risk. As with households, it was not possible to verify the cleaning frequency of cloths or tea towels, as washing took place out of view of the camera. However, it was common for a single cloth or tea towel to be used for multiple purposes over the course of a day. Survey data for claimed washing or replacing behaviours in FBOs are shown in Figure 4.

**Figure 4. Claimed frequency of washing or changing tea towels or cloths in FBOs (30 FBOs responded to this survey question)**



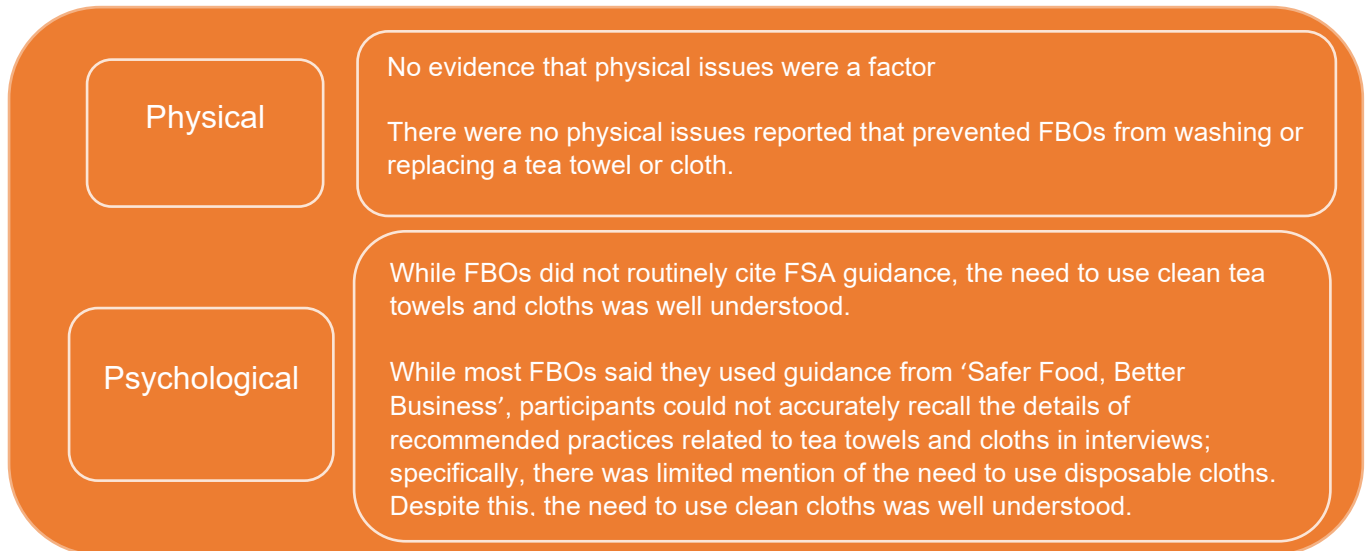
## Factors influencing the multiple use of tea towels and cloths in FBOs

### Summary

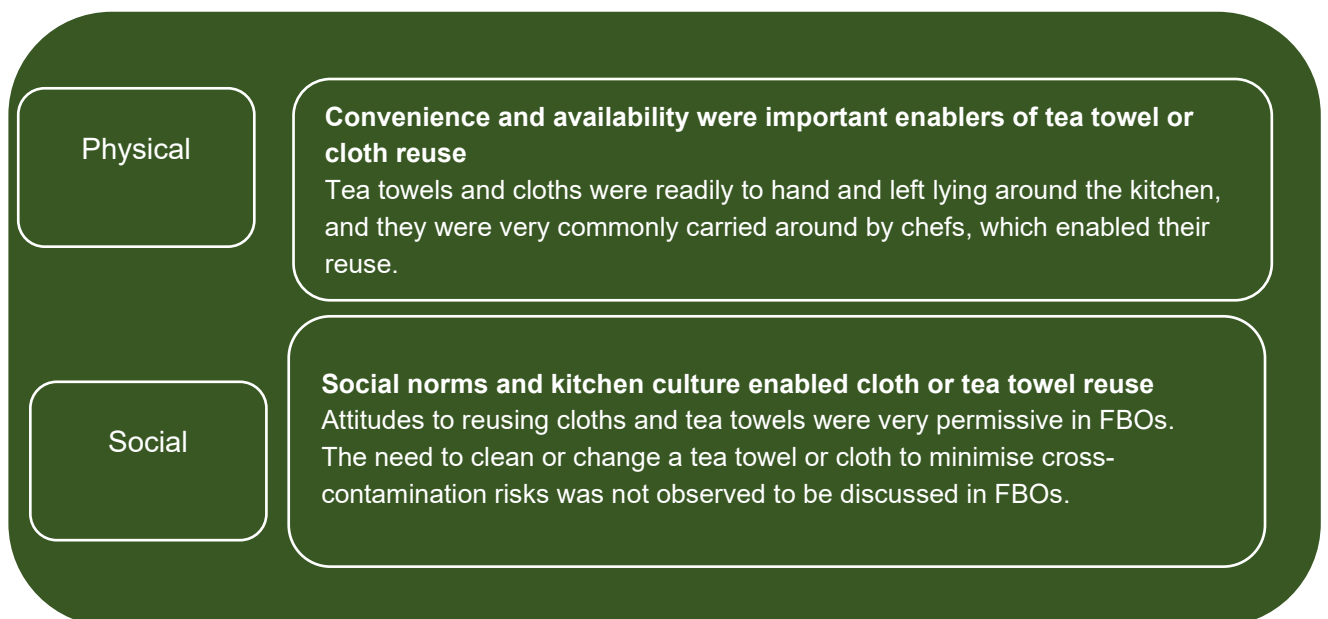
The reuse of towels and cloths for multiple purposes in FBOs is enabled by their availability and the habitual nature of the behaviour. The behaviour is reinforced by permissive social norms around their reuse and the near universal practice of chefs carrying a tea towel or cloth around a kitchen. Beliefs about the low likelihood of foodborne illness arising from the multiple use of tea towels or cloths also reinforced the behaviour. A summary of COM-B factors is given in figure 5.

**Figure 5. Summary of COM-B factors influencing the reuse of tea towels and cloths in FBOs**

**Capability**

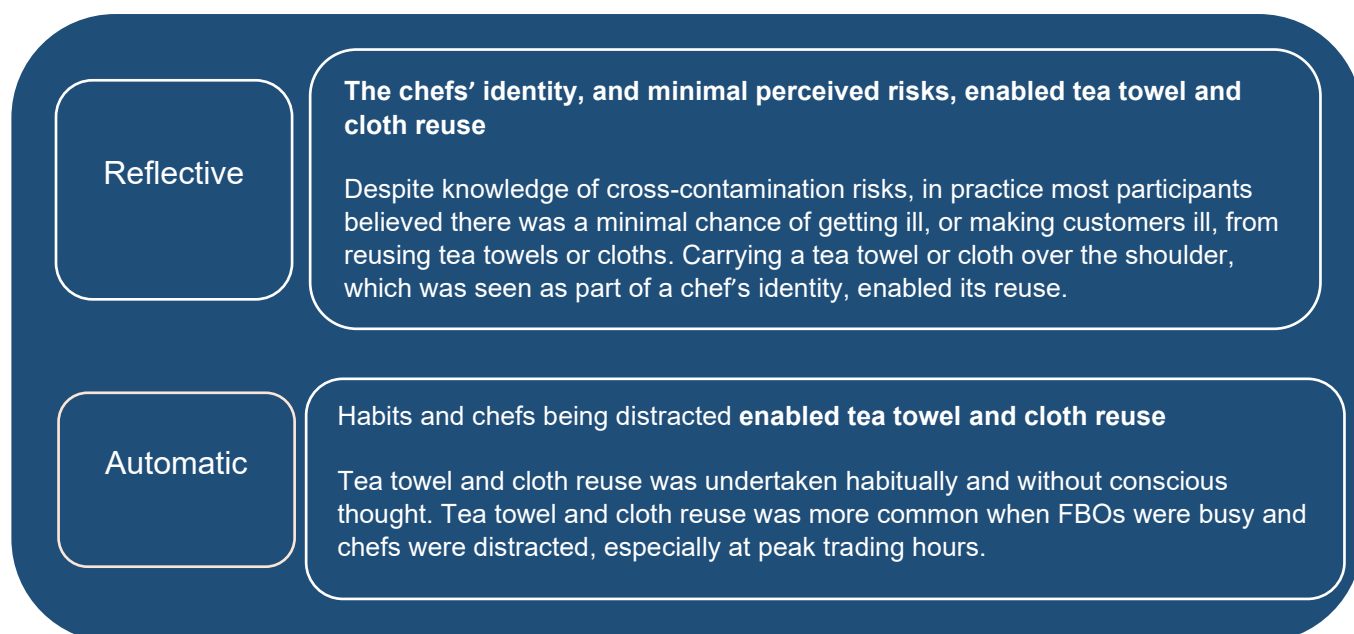


**Opportunity**





## Motivation



## Detailed findings

### Physical capability

There were no instances of FBO participants saying that either they or members of their staff were not physically capable of changing or cleaning towels or cloths.

### Psychological capability

In interviews, participants were aware of the need to wash tea towels and cloths regularly with most FBOs claiming to do this on a daily basis. While 20 FBOs claimed to use 'Safer Food, Better Business' guidance<sup>15</sup>, details of the guidance were not readily recalled in interviews in the context of cleaning practices around tea towel and cloth use. Specifically, 'Safer Food, Better Business' protocols call for the use of disposable cloths wherever possible. They also call for a new or freshly cleaned and disinfected cloth to wipe work surfaces, equipment or utensils for ready-to-eat food. There was limited mention of these behaviours during interviews, and practices were also not routinely observed.

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<sup>15</sup> Separate guidance is available to [FBOs in Northern Ireland](#)

Participant's understanding of the risk associated with unclean tea towels and cloths is explored in the [reflective motivation](#) section.

### **Physical opportunity**

The convenience and availability of tea towels and cloths was one of the key factors influencing their reuse. As noted, almost all FBO kitchens in the sample used tea towels and it was common for these to be carried by a chef, either over their shoulder or tucked into their apron around the waist. This meant that a tea towel was often immediately available for a range of uses in the kitchen. In this context, time was also cited as a significant factor, with tea towels being 'quick and easy' to use when a chef was busy.

Cloths were also physically available, but they were generally not carried around like a tea towel and instead were left near to the sink. As with households, there was a smaller range of uses of cloths compared with tea towels in FBOs.

Neither a lack of fresh tea towels or cloths nor the ability to clean them was cited as a barrier to changing or washing the item.

In interviews, the use of 'blue roll'<sup>16</sup> or other disposable cloths was mentioned by several FBOs as routinely used in the kitchen. This was to some extent seen in the observations, and in certain businesses blue roll was extensively used (though no business solely used blue roll and disposable cloths in the kitchen). For those kitchens where blue roll was present but less routinely used, cost or wastefulness were not cited as barriers. Overall, the physical availability of blue roll did not necessarily result in it being used by kitchen staff.

### **Social opportunity**

The culture of the kitchen played a significant role in shaping the reuse of tea towels and cloths, as well as the use of blue roll. In terms of tea towel reuse, the carrying of tea towels by chefs to be used for multiple purposes was normalised in many kitchens.

Additionally, the culture of a professional kitchen made conversations about basic issues such as tea towel use seem trivial and patronising. As one interviewee noted:

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<sup>16</sup> Disposable, blue-coloured kitchen roll.

“We don’t have any rules around the use of tea towels. And it would be strange to try and tell our staff how to use them. They are very experienced.”

European restaurant, fewer than 5 staff, FHRS rating 4–5

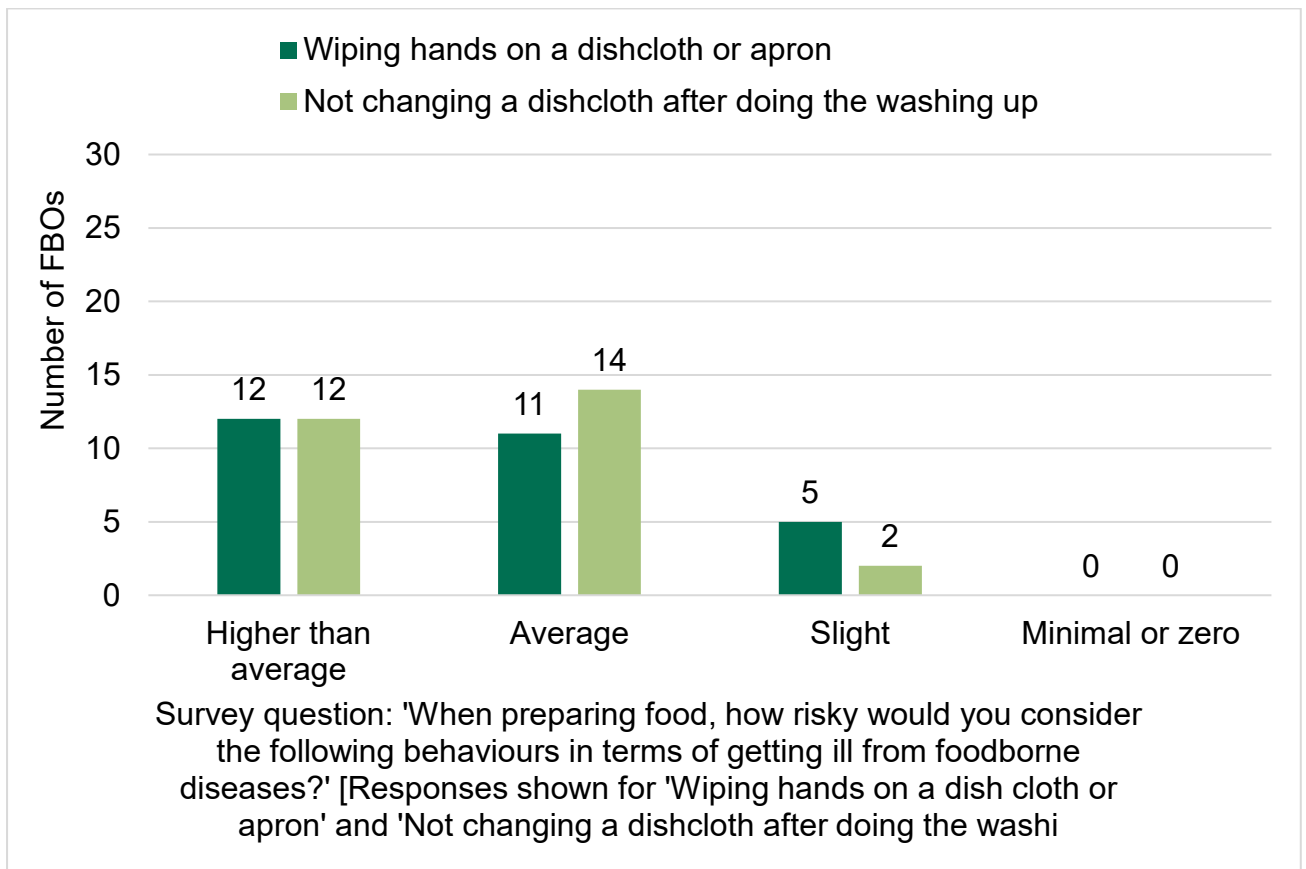
Consequently, there was a lack of feedback on the reuse of tea towels or cloths, even when staff were observed to pick up and reuse cloths that had fallen on the floor. While the social norms around tea towel use were relaxed and permissive, most unhygienic uses of tea towels – such as chefs blowing their noses into them – was done when others were not present in the kitchen.

Finally, the use of blue roll did appear to be positively influenced by social norms in the kitchen. Whether blue roll was used tended to be part of a kitchen’s culture, and it was typical for a kitchen to either routinely use blue roll or not, rather than each member of staff adopting different practices. During interviews, certain managers mentioned they would specifically highlight to their staff the need to use blue roll, rather than towels, for tasks such as wiping up spills.

### **Reflective motivation**

In the survey, most FBOs believed there was a ‘higher-than-average risk’ or ‘average risk’ of foodborne illness resulting from reusing cloths (see figure 6).

**Figure 6: Relative risk associated with getting ill from a foodborne disease from reusing a cloth in FBOs (28 FBOs responded to this survey question)**



However, in interviews, FBOs were vague about the nature of these risks and generally, on reflection, the risk of foodborne illness resulting from the reuse of tea towels or cloths seen as relatively small.

“The risk from reusing cloths? Oh cross-contamination, I imagine. And germs, germs. Yeah, just breeding of germs.”

Catering business, fewer than 5 staff, FHRS rating 4–5

FBOs did identify that using a tea towel or cloth to wipe down surfaces during the preparation of raw MFP was a high risk, and more likely to result in the item being cleaned or replaced.

“I probably do use [a tea towel] for most of the day. But if it was used to wipe up a load of meat juices and fish then I’d probably ditch it.”

## Catering business, fewer than 5 staff, FHRS rating 4–5

Despite these claims, the reuse of a tea towel or cloth was observed 184 times where MFP (raw/cooked) was prepared in FBOs, and it was very common for the cloth to be left in the kitchen afterwards, rather than being taken away for washing and disinfecting. Additionally, there were several observations of tea towels being used to wipe down chopping boards after the preparation of MFP (raw/cooked) and then being reused for other tasks.

Only a minority of FBOs stated that they were unconcerned about risks as the kitchen was clean and cloths or tea towels were not used 'to touch the food'. More generally, when discussing risks from tea towels or cloths, it was framed as resulting from the practices of others in the kitchen. The individual reuse of tea towels or cloths was seen as less risky and, in this context, a chef carrying a tea towel all day for their sole use was not mentioned as posing a high risk, as the chef controlled the use of the tea towel.

Finally, the role of a tea towel as part of a chef's identity was a strong factor shaping the reuse of tea towels and cloths. In one interview, a chef who had worked in many kitchens during his career was asked why the practice of chefs carrying a tea towel was so universal. After highlighting a series of practical reasons for over the shoulder (such as convenience and ease of use), he said 'but the real reason is you feel like a gladiator'. This symbolic and performative role of the tea towels as part of the identity of the chefs, marking the chef out as experienced and in charge, was likely to enable the reuse of the towel for multiple purposes.

### **Automatic motivation**

The habitual use of tea towels and (to a lesser extent) cloths was one of the main factors influencing their use.

Observations from KL2 indicated that chefs were multitasking and distracted when cooking (including having conversations with other people in the kitchen). Typically, the use of cloths or tea towels involved quick, habitual behaviours such as holding a hot pan, wiping something down or mopping a spill. These uses of tea towels and cloths were often performed when the kitchen was very busy and chefs were distracted. As noted earlier, the reuse of tea towels and cloths was statistically more frequent on Friday and Saturday from 6–8pm.

It was common in interviews for participants to say they were 'not really conscious' of how they used tea towels or cloths. Additionally, respondents would claim to not

reuse tea towels or cloths for certain purposes (such as wiping down utensils) but were observed to do so.

## Other related behaviours

While not the subject of this chapter, 'wiping hands on clothing' was a related behaviour observed during the study, with similar behavioural drivers to 'reusing a tea towel or cloth for multiple purposes'. Specifically, wiping hands on clothing was driven by ease and convenience (relative to washing hands) and the habitual and unconscious nature of the behaviour (automatic motivation). The risks from foodborne illness as a consequence of wiping hands on clothing were perceived as minimal (reflective motivation), and the subject was not openly discussed (social opportunity). One notable observation in FBOs was that different items of clothing appeared to prime the extent to which staff wiped their hands. For example, it was common for staff to wipe hands on chef whites (especially jackets), whereas this was not observed for staff wearing t-shirts (who would generally wipe hands on their trousers) (physical opportunity). Chef whites may subconsciously influence hand-wiping behaviour, as such items of clothing may be associated as being made for this purpose (though this hypothesis was not verified in interviews) (automatic motivation).

## Case study

### **Reusing a tea towel or cloth in an FBO**

**Name:** Mohamed

**Role:** Chef

**Type of business:** South Asian restaurant

**Number of staff:** 5-10

**FHRS rating:** 4-5

Mohamed is a chef in a South Asian restaurant, with a focus on takeaway food and delivery. It is a family run business, with 6 members of staff, with typically 2-3 people working per shift. As well as a range of vegetarian meals, the main meat dishes are chicken and lamb curries, which are prepared from scratch. Trading was significantly impacted by the COVID-19 pandemic and the business has commercially struggled since this time. The kitchen can be very busy, with shifts

often ending past 11pm. Cooking and cleaning tasks are shared out across the team, and much of the washing up is done by hand.

The kitchen is relatively small, with work surfaces made from stainless steel. In the middle of the kitchen is a table, which takes up a considerable amount of space. The kitchen is quite cluttered with a wide variety of ingredients, pans and utensils left on the surfaces. One sink is often full of pots, but the other is generally kept empty and used for handwashing.

The owner of the business is Mohamed's daughter in law, Anaya. She says food hygiene is very important. During her KL2 interview, Anaya stresses the importance of making sure that the food they serve is 'nice tasting and clean'. The reuse of cloths and tea towels are not spontaneously mentioned by Anaya, and she does not see this behaviour as a particular food hygiene risk, mirroring her responses from the survey. Overall, the use of tea towels and cloths is seen as 'common sense' and not discussed with staff. Tea towels, cloths and blue roll are all provided in the business.

On one occasion, Mohamed, is prepping chicken for a curry. Mohamed works alone for extended periods. He washes his hands with soap at the start of the session but directly handles cooked chicken and other ingredients throughout the meal preparation process without washing his hands.

During preparation, Mohamed frequently uses a tea towel for a wide number of purposes. This includes frequently wiping his hands, as well as wiping the countertop and the cooking pot. He also uses the cloth to wash the interior of a pan and, at one point, to clean his face. The cloth is visibly damp, dirty and is carried around and left in different areas of the kitchen. While blue roll is available near the sink, Mohammed only uses it to dry pots and pans after washing up.

This multiple use of a tea towel is not unique to Mohamed and during other meal occasions, Anaya is observed to perform similar behaviours (though less frequently than Mohamed).

### **Analysis of Mohamed's behaviour**

The influences on Mohamed's behaviour primarily concern physical opportunity and automatic motivation, with both factors enabling the reuse of tea towels and cloths. Tea towels and cloths are convenient and available, being left out on kitchen surfaces and close to hand, as well as being carried around the kitchen (physical opportunity). While blue roll is also available, it is only used by Mohamed for drying pans, which suggests routines and protocols for the use of disposable

cloths are not established. Mohamed's behaviour is likely to be unconscious, as he is often distracted and multitasking when reusing tea towels and cloths (automatic motivation). Social norms are permissive around the reuse of towels or cloths as Anaya is also observed to reuse tea towels and cloths and the use of tea towels and cloths are not discussed or monitored (social opportunity), and she does not believe there are significant cross-contamination risks resulting from their reuse (reflective motivation).

## Identifying behaviours for interventions (FBOs)

In reviewing the KL2 findings, the reuse of tea towels and cloths in FBOs was predominately driven by convenience and availability, as the items were carried and left around the kitchen, and readily to hand. Additionally, the habitual and unconscious nature of tea towels and cloths reuse, especially when businesses were busy, potentially made it a challenging behaviour to address. While FBOs claimed to wash or change tea towels or cloths daily, between changes these items were reused for a wide variety of purposes.

After KL2 fieldwork was completed, a workshop was held with experts in food safety and the behavioural sciences to discuss the COM-B influences on each of the KL2 priority behaviours, including reusing a tea towel or cloth for multiple purposes. In the workshop, experts discussed the findings from KL2 to explore the 'problem behaviours' that occurred in kitchens and then considered the 'desired practice'; that is, the behaviour that FBOs should do to improve food safety. In this case, the desired practice is to **use disposable cloths wherever possible or always use a new or freshly cleaned and disinfected cloth to wipe work surfaces, equipment or utensils.**

Once the 'desired practice' was established, the workshop then explored the specific behaviours to target, to encourage the desired practice. Each of these specific behaviours is explored in more detail below. It should be noted that the workshop was not designed to explore behavioural interventions, as this was outside of the scope of KL2. These specific target behaviours could be used in future research, for the development of behavioural interventions.

### **Specific behaviours to target to achieve the desired practice:**

- 1) **Using blue roll or disposable cloths for specific tasks**



- KL2 data show that while most FBOs had blue roll (or other disposable cloths) present in the kitchen, its use differed across FBOs. Use was influenced by culture, which in turn helped to establish routines around occasions of use.
- 'Safer Food, Better Business' guidance states to use 'disposable cloths wherever possible'. This guidance could be sharpened and one behaviour to target for interventions was to clearly associate the use of blue roll with a specific task, such as wiping down surfaces after preparing raw MFP. This would be a priority for future intervention research.
- Where blue roll was not available, an associated behaviour was to link the need to change a tea towel or cloth to a specific trigger point during the food preparation process (such as after the chef has prepared raw foods). This was seen as a potentially effective behaviour to target.

## 2) **Chefs to change their 'personal cloths' frequently**

- KL2 evidence shows that chef's carrying tea towels leads to their common reuse. Interview data shows personal cloths were not viewed as a source or risk by chefs in the study and were seen as part of a chef's identity. Moreover, food safety experts in the workshop suggested that carrying a damp, warm cloth on the body for an extended period was likely to encourage the growth of bacteria.
- Consequently, a desired behaviour could be a focus on chefs changing their personal cloths frequently.

## 3) **Using different cloths for specific tasks.**

- The potential for FBOs to use colour-coded cloths for specific tasks was also discussed as a potential behaviour to target for interventions. Colour-coding items for food safety purposes is familiar in FBOs, and it is commonly used for chopping boards and utensils to manage cross-contamination risks for raw and cooked foods and cross-contact risks from allergenic foods.
- However, based on KL2 data, there were significant barriers to this behaviour becoming established. Specifically, the reuse of cloths and tea towels for multiple purposes was habitual and driven by convenience. Trying to find the right coloured tea towel or cloth to mop a spill during busy service periods may be impractical during these busy periods. Moreover, other KL2 evidence indicates that colour coding to promote safe practices in other domains was not always effective (see [Reusing a chopping board after preparing meat, fish and poultry](#)). These challenges should be considered carefully when considering behavioural interventions.

# Conclusion

This chapter provided in-depth analysis on reusing cloths and tea towels and the factors that influence this behaviour, including illustrative case studies of these factors in practice. The findings presented in this report allow the FSA to better understand this behaviour, and the risks involved.

Understanding the specific influences on these behaviours provides the foundation for future work on designing effective interventions to enable behaviour change. Future research should focus on designing interventions which can enable the positive target behaviours outlined in this report. Following on from the use of COM-B to understand behaviours, The Behaviour Change Wheel<sup>17</sup> can be used to identify effective interventions and behaviour change techniques.

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<sup>17</sup> Michie, S., van Stralen, M.M. & West, R. The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Sci* 6, 42 (2011). <https://doi.org/10.1186/1748-5908-6-42>